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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/669,680

09/25/2003

Martijn Gerard Dominique Wehrens

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06/29/2004

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EXAMINER

STOCK JR, GORDON J

ART UNIT

PAPER NUMBER

2877

DATE MAILED: 06/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

5A

Office Action Summary

Application No.

10/669,680

Applicant(s)

WEHRENS ET AL.

Examiner

Gordon J Stock

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-13 and 15-17 is/are rejected.
- 7) ☒ Claim(s) 5 and 14 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION***Drawings and Specification***

1. The specification is objected to for the following: on page 13 paragraph 0053 should read --x,y_{sl}: the position of TIS sensor in x,y;--. In addition, in paragraph 0050 z_{0sl}, z_{0rs}, z_{0r} are not defined in paragraph 0055 and in paragraph 0081 FC_{xTIS} and FC_{yTIS} are not defined in paragraph 0089. Corrections required.
2. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: in claim 10 there lacks antecedent basis for the particular measurement apparatus and processing mechanism. Corrections are required.
3. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.
4. Figure 1a should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). In addition, the drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the system comprising: an exposure apparatus; measurement apparatus; processing mechanism; and reticle stage actuation mechanism of **claim 10** with sensors to detect vertical position focus levels of **claim 11** must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures

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appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled “Replacement Sheet” in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

5. The drawings and specification are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: P1 and P2 of Fig. 1a; $j+1$ through $-j-1$; r mm and s mm of Figs. 2b and 4; T_{xh} and T_{yh} of Fig. 2b. Corrected drawing sheets, or amendment to the specification to add the reference character(s) in the description, are required in reply to the Office action to avoid abandonment of the application.

Claim Objections

6. **Claims 5 and 14** are objected to for the following: the terms, “said identifiable marker” and “said scan slit” lack antecedent basis; in addition, the following variables are not defined in the claims: FC_{lens} , FC_{xTIS} , ry_0 , R_{xsl} , R_{x0} , and FC_{yTIS} are not defined in the claim; and the terms Q_{sl} and R_{yrs} are defined yet do not appear in the height offset equation. Lastly, in claim 5 line 8 and in claim 14 line 7 ‘ x, y_{sl} ’ should read $--x, y_{sl};--$ Corrections are required.

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7. **Claims 6, 7, 15, and 16** are objected to for the following: "said exposing" lacks antecedent basis. Corrections required.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. **Claims 1-4, 6-13, and 15-17** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Kojima et al. (6,027,843)**.

As for **claims 1-4, 6-13, and 15-17**, Kojima in a charged particle beam microlithography method for imaging fault correction discloses the following: directing a projection beam through a reticle such that said system generates an image of the reticle on a substrate (col. 6, lines 38-42); measuring height information based on reticle image (col. 9, lines 5-15); determining reticle deformation attributes based on defocus and rotational errors and therefore stage deformation attributes such as height and rotational offsets and calibrating said reticle stage through correction of image rotation and focus through stage actuation device, a stage correction device (col. 9, lines 3-25; col. 10, lines 30-45; col. 11, lines 9-40); scanning is performed through slit type areas, stripes with the use of identifiable markers such as alignment marks at a plurality of positions that go in two orientations and x and y directions with a fixed reticle (Figs. 2-4). There is a system comprises an exposure apparatus, main controller, and stages for reticle and substrate with correction (Fig. 1). As for actual decomposition, Kojima is silent but suggests that decomposition occurs for heights are used for determining correction offsets to the reticle stage

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(col. 9, lines 8-12; col. 10, lines 30-45; col. 25, lines 24-30). Therefore, it would be obvious that the height offsets are decomposed into distortional characteristics, for the height measurements are converted into distortional characteristics related to focus and rotation errors.

Allowable Subject Matter

10. **Claims 5 and 14** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

As to **claims 5 and 14**, the prior art of record, taken alone or in combination, fails to disclose or render obvious in a method and system of calibrating a reticle stage the particular characterization of the distortion factors, in combination with the rest of the limitations of **claims 5 and 14**.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: **U.S. Patent 6,002,487 to Shirata**.

Fax/Telephone Numbers

If the applicant wishes to send a fax dealing with either a proposed amendment or a discussion with a phone interview, then the fax should:

1) Contain either a statement "DRAFT" or "PROPOSED AMENDMENT" on the fax cover sheet; and

2) Should be unsigned by the attorney or agent.

This will ensure that it will not be entered into the case and will be forwarded to the examiner as quickly as possible.

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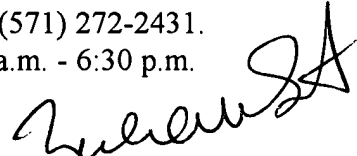
Papers related to the application may be submitted to Group 2800 by Fax transmission. Papers should be faxed to Group 2800 via the PTO Fax machine located in Crystal Plaza 4. The form of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CP4 Fax Machine number is: (703) 872-9306

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gordon J. Stock whose telephone number is (571) 272-2431. The examiner can normally be reached on Monday-Friday, 10:00 a.m. - 6:30 p.m.



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June 23, 2004


Zandra V. Smith
Primary Examiner
Art Unit 2877